

Minnesota Principal Academy – Action Learning Project

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Deliberate Math Achievement:

An Evaluation of *Standards Based Mathematics Instruction*, an Elementary School Instruction Reform

Abstract

This Action Learning Project is using multiple methods to evaluate the implementation of a mathematics reform initiated by elementary classroom teachers in a traditional small isolated K-6 elementary school in rural Minnesota. The reform, titled "Standards Based Mathematics Instruction," was developed in collaboration with the West Central Integration Collaborative, District Leadership Team, and the principal. The approach requires teachers to develop: a mathematics standards checklist, formative and summative assessments aligned to the framework and meet monthly with grade level teams to analyze student data. This project will evaluate the perceptions of students and staff regarding the mathematics standards checklist, formative assessments and monthly grade level teams meeting to analyze student data and objective measures of student knowledge as indicated by scores on standardized mathematics achievement tests and the Minnesota Comprehensive Assessment (MCA) III in mathematics.

While more surveying of students and staff will be required and addition student scores on standardized mathematics achievement tests and the MCA III mathematics assessment. After the first five months of implementation, K-1 teachers reflected positive perceptions about the mathematics standards checklist, formative and summative assessments and meeting monthly with grade level teams to analyze student data. Classroom teachers reported the standards checklist and meeting monthly with their grade level team assisted them in staying focused on teaching to the MN mathematics standards. Initial standardized achievement tests at K-1 indicated an increase in student performance.

Vision: All eighth grade students ready for linear algebra.

Background/Context: This initiated change to the previous approach to mathematics instruction took place in a traditional elementary school a five month (January to May 2015) time span. Demographics of the student body of 394 students: 46% FRL; 14% Students of Color; 10% SPED; 4% ELL; 30% OPEN ENROLLING

Why a change? For two consecutive years student grade level MCA III mathematics proficiency rates were trending below the Minnesota State proficiency average rates. District Assessment Team and the District Mathematics team confirmed the down ward trend in student proficiency on the MCA III mathematics assessment.

What we did: As a result of the review of student performance in mathematics and collaboration of teachers, we incorporated a mathematics standards based checklist and formative and summative assessments developed by MN Northeastern Service Cooperative mathematics specialist (R. Davis, 2007). Monthly grade level meetings were established to support teachers as they reviewed and analyzed student formative and summative assessments. To screen and monitor student progress a standardized mathematics achievement test is administered in the fall, winter and spring to all students in K-6 grade.

What We Found Out:

1. The pilot group of classroom teachers in Kindergarten and First Grade reported the approach of using a standards framework and formative and summative assessments as a better approach.
2. The Fast Bridge Early Math Impact Report indicates higher mathematics scores from Kindergarten and First Grade students.

MCA III Mathematics Proficiency Rates by Grade

| Year | Third | Fourth | Fifth | Sixth | Seventh | Eighth |
|-----------|-------|--------|-------|-------|---------|--------|
| 2012-2013 | 60.8% | 65.9% | 59.4% | 60.0% | 62.0% | 56.9% |
| 2013-2014 | 62% | 66.0% | 57.2% | 55.3% | 61.0% | 58.6% |

Fast Bridge Early Math Impact Report

| Spring 2015 | Low Risk | Some Risk | High Risk |
|--------------|------------|-----------|-----------|
| Second Grade | 62% | 14% | 24% |
| First Grade | 71% | 28% | 1% |
| Kindergarten | 76% | 15% | 9% |

Implications for practice:

1. Implementation Time Line
 - a. 2014-15 for Kindergarten and First Grade
 - b. 2015-2016 for Second and Third Grade
 - c. 2016-2017 for Fourth, Fifth and Sixth Grade.
2. Qualitative and Quantitative Data
 - a. Start in 2015-2016 to collect student and staff perception about mathematics achievement
 - b. Continue Fast Bridge Mathematics Assessments in K-6 Grade
3. Teacher and Administration Collaboration
 - a. District Data Teams and District Leadership Teams essential with the implementation
 - b. Additional time needed to be budgeted so grade level teams could analyze results and plan instruction.
4. Student Supports
 - a. After school and summer school programs will be focused on student learning targets
 - b. Learning targets or goals were developed
 - c. Parent engagement increases as parents are aware of student learning needs